REMARKS

Initially, Applicant appreciates the withdrawal of the previous rejections and objections as well as the clarification of the reference intended to be relied upon.

The pending claims have been rejected under 35 USC 103(a). Applicant respectfully traverses.

Claim 1, for example, has been rejected over Boute in view of Park. Boute does teach an AV optimization routine; however, the basis for determining an optimal AV interval is to, among other things, determine a maximum QT interval at a given rate. The present invention, as expressed in claim 1 for example, identifies a QT interval having a minimum amount of variation over time. Thus, the "minimal QTD" is obtained and utilized.

The Examiner acknowledges that this aspect is not present in the Boute reference and relies upon Park. However, as articulated in the previous response, the Examiner's reliance on this reference is misplaced. The Examiner states that Park discloses a device that "measures a QTD to determine the optimal AV delay corresponding to a minimal QTD." This is factually incorrect and unsupportable.

Park addresses, for example, bi-ventricular pacing systems where LV and RV pacing times may be separately adjusted. Likewise, there may be differences between LV QT intervals and RV QT intervals for the same cardiac cycle. Stepping back, this type of pacing is provided for patients having, e.g., heart failure, where such bi-ventricular pacing is an appropriate therapy.

The ventricular repolarization interval, as represented by the QT interval is measured and stored within the Park device. Certain minimum and maximum values are noted and the difference between these is obtained. This value – the difference between a maximum QT interval and a minimum QT interval is referred to as the QT interval dispersion. This value is then monitored over time and trends are established. If the QT interval dispersion is increasing, this is taken as indicative of a worsening of the patients heart condition, i.e., heart

failure is worsening. Conversely, if the QT interval dispersion is decreasing or small, this is taken to indicate that patient's heart failure status is either good or improving.

In the first case, bi-ventricular pacing is modified to force a reduction in the QT interval dispersion. This is accomplished, according to Park, by modifying the relative inter-ventricular pacing – that is the relationship between LV and RV pacing pulses. This does not include, nor is there any mention of adjusting AV timing parameters. In the second case (improving condition), the AV delay is lengthened so that ventricular pacing is reduced; that is, the AV delay is made long so that intrinsic conduction is more likely and pacing is less likely. Thus, in the first case AV delay is not utilized and certainly not optimized. In the second, AV delay is lengthened so that pacing is avoided – again, not an optimization according to the presently claimed invention.

If the analysis were to end here, the references alone or combined fail to teach the claimed invention and thus, no primae facie case of obviousness has been established.

Yet another fact, when Park is read and considered as a whole, renders the rejection unsupportable. The QT interval dispersion is not simply a measure of an overall QT interval for a cardiac cycle. Rather, QT interval dispersion is a comparison of different QT intervals for a *single* cardiac cycle as measured by different sensing electrodes. See Col. 2, lines 4-9; 22-27. Thus, the QT interval dispersion is the difference between the QT interval as measured in the right ventricle and the QT interval measured in the left ventricle. Specifically, the QT interval dispersion is a "difference between a maximum ventricular repolarization interval ***measured with one of a plurality of electrode configurations*** and a minimum ventricular repolarization interval ***measured with another one the plurality of electrode configurations***." (Emphasis added) Col. 2, lines 23-27.

To summarize, Park is monitoring left and right ventricular activity. The more synchronous this activity, the better the patient's condition and vice versa. There is no testing at a plurality of AV values at a given rate to determine QT

intervals; no identification of a QTD during such testing and corresponding to the AV interval; and certainly no determination of an optimal AV interval based upon a minimal QTD. As such, Park does not teach what the Examiner has asserted and does not remedy the deficiencies acknowledged by the Examiner with respect the Boute reference. As such, the rejection is improper and must be withdrawn. The remaining claims are allowable for the same and similar reasons.

Applicant respectfully requests withdrawal of the rejections and an indication of allowable subject matter. Should any issues remain outstanding, the Examiner is urged to telephone the undersigned to expedite prosecution.

Respectfully submitted,

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